## REMARKS

By the foregoing amendment the claims have been amended to specify a method for determining the presence of a target chemical. It is respectfully requested that this amendment be entered as it is supported by the original claims.

Claims 1-8 and 10-11 have been rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,935,345 to Guilbeau et al. Before discussing the differences and deficiencies of this reference a brief review of amended claim 1 is in order. Amended claim 1 specifies a method for determining the presence of a target chemical in a test fluid comprising providing a sensing system including (i) a micro-flow reservoir system having at least one micro-flow reservoir including a reagent fluid comprising a sensing substance which reacts with the target chemical, (ii) a sensor system comprising a thermopile for detecting the occurrence of said reaction connected to the micro-flow reservoir system, and (iii) a conduit connecting the micro-flow reservoir system and the sensor system for conveying reagent fluid in the micro-flow reservoir system to the sensor system, immersing the sensing system in the test fluid, conveying the reagent fluid in the micro-flow system to the sensor system, and detecting the occurrence of a reaction between the reagent fluid and the target chemical.

There is no disclosure or suggestion in Gilbeau et al. of a method for determining the presence of a target chemical in a test fluid comprising immersing the sensing system in the test fluid as in the claimed invention. Thus, Guilbeau et al. fails to anticipate the claimed invention.

Claims 12-16 and 18-19 have been rejected as anticipated under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,434,084 to Burgess, Jr. There is no teaching or suggestion in Burgess, Jr. of a method for determining the presence of a target chemical in a test

fluid comprising immersing the sensing system in the test fluid as in the claimed invention. Thus Burgess et al. fails to anticipate the claimed invention.

Claim 9 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Guilbeau et al. alone or in view of U.S. Patent No. 4,685,463 to Williams. As noted above there is no teaching or suggestion in Guilbeau et al. of immersing the sensing system in the test fluid.

Claim 17 has been rejected under 35 U.S.C. §103 as being unpatentable over Burgess, Jr. As discussed above Burgess, Jr. fails to teach or suggest a method for determining the presence of a target chemical in a test fluid comprising immersing the sensing system in the test fluid as in the claimed invention.

In view of the foregoing claims 1-19, all the pending claims, are in condition for allowance.

Prompt and favorable action is respectfully requested.

A marked-up version of the changes made to the application is attached hereto as an appendix. In the marked-up version, the words bracketed are being deleted and those underlined are being added by the amendment, which places the amended language in the form given above. The attached appendix is captioned **VERSION WITH MARKINGS TO SHOW CHANGES MADE.**

Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

1. (Amended) A method [sensing system] for determining the presence of a target chemical in a test fluid comprising:

providing a sensing system including;

(i) a micro-flow reservoir system having at least one micro-flow reservoir including a reagent fluid comprising a sensing substance which reacts with the target chemical,

(ii) a sensor system comprising a thermopile for detecting the occurrence of said reaction connected to the micro-flow reservoir system, [and]

(iii) a conduit connecting the micro-flow reservoir system and the sensor system for conveying reagent fluid in the micro-flow reservoir system to the sensor system,

[wherein the sensing system is capable of being immersed within said test fluid]

immersing the sensing system in the test fluid, conveying the reagent fluid in the micro-flow system to the sensor system, and

detecting the occurrence of a reaction between the reagent fluid and the target chemical.

2. (Amended) A [sensing system] method according to claim 1 wherein the sensor system includes:

a thin film thermopile sensor having a plurality of sensing junctions and a plurality of reference junctions;

a hollow membrane fiber disposed proximate to each of said sensing junctions, wherein one end of said hollow membrane fiber is connected to the conduit means for receiving fluid from the micro-reservoir system and the other end is connected to a waste reservoir, said hollow membrane fiber having a porosity permitting passage therethrough of the target chemical from said test fluid while preventing passage therethrough of said sensing substance from said reagent fluid.

3. (Amended) A [sensing system] method according to claim 1 wherein said reagent fluid includes a catalyst.

4. (Amended) A [sensing system] method according to claim 3 wherein said catalyst is an enzyme which reacts with the target chemical to provide a heat that is proportional to the concentration of said target chemical.

5. (Amended) A [sensing system] method according to claim 4 wherein said enzyme is selected form the group consisting of glucose oxidase, catalase, hexokinase, glucose dehydrogenase, cholesterol oxidase, lactase, urate oxidase, trypsin, apyrase, penicillinase, and mixture thereof.

6. (Amended) A [sensing system] method according to claim 1 wherein said micro-flow reservoir system includes a micro-flow reservoir comprising a fluid including a calibration compound.

7. (Amended) A [sensing system] method according to claim 6 wherein said calibration compound is selected from the group consisting of hydrogen peroxide, catalase, glucose, target chemical, and mixtures thereof.

8. (Amended) A [sensing system] method according to claim 2 wherein said hollow membrane fiber comprises a semipermeable dialysis membrane, and wherein the outer diameter of said hollow membrane fiber is in thermal communication with said sensing junctions.

9. (Amended) A [sensing system] method according to claim 8 wherein said semipermeable dialysis membrane comprises a compound selected from the group consisting of acetate, polysulfone, polyacrylonitrile, cellulose, and mixtures thereof.

10. (Amended) A [sensing system] method according to claim 1 wherein said thermopile comprises:

a thin film thermopile disposed upon a supporting substrate, said thin film thermopile including a plurality of pairs of thin film thermocouple junctions, each of said pairs of thermocouple junctions including a reference junction and a sensing junction electrically coupled in series connection with one another and spaced apart from one another, said reference junction and a said sensing junction within each pair of thin film thermocouple junctions creating a temperature-dependent voltage when said reference junction and said sensing junction are electrically coupled in series connection, said plurality of pairs of thermocouple junctions being electrically coupled in series connection with one another between first and second output

terminals, said plurality of pairs of thermocouple also having a plurality of output terminals which are individually attached to a subset of reference junctions along the thermopile length in between the first and second terminals; and

wiring means coupled to each of said output terminals of said plurality of pairs of thin film thermocouple junctions for providing a voltage difference signal proportional to a difference in temperature measured proximate the sensing and reference junctions arising from reactions between the reagent fluid and target chemical.

11. (Amended) A [sensing system] method according to claim 1 wherein the at least one reservoir including reagent fluid comprises:

a containment enclosing a collapsible bag that is held at positive pressure, said collapsible bag housing the reagent fluid; and

a resistance tubing having an open end that is immersed in the reagent fluid to create sufficient fluidic resistance to control the flow rate of said reagent fluid through said open end of said resistance tubing.

12. (Twice Amended) A [sensing system] method for determining the presence of a target chemical comprising:

providing a sensing system including;

(i) a micro-flow reservoir system having at least one micro-flow reservoir including a reagent fluid comprising a sensing substance which reacts with the target chemical,

(ii) a sensor system comprising an optical cell connected to the micro-flow reservoir system, and

(iii) a conduit connecting the micro-flow reservoir system and the sensor system,

immersing the sensing system in the test fluid,

conveying the reagent fluid in the micro-flow system to the sensor system, and

detecting the occurrence of a reaction between the reagent fluid and the target chemical.

13. (Amended) A [sensing arrangement] method according to claim 12 wherein the reagent fluid comprises a reagent which exhibits a measurable change in optical properties upon contacting the target chemical.

14. (Amended) A [sensing arrangement] method according to claim 13 wherein said optical property is at least one selected from the group consisting of absorbance, fluorescence, color change, and chemiluminescence.

15. (Amended) A [sensing arrangement] method according to claim 13 wherein said sensing arrangement further [comprising] comprises a gas permeable membrane fiber which is connected between said conduit and said sensor such that said gas permeable membrane fiber is in fluid contact with the test fluid.

16. (Amended) A [sensing arrangement] method according to claim 13 further comprising a micro-flow reservoir comprising a sweep fluid,

a conduit connecting said reservoir comprising a sweep fluid to one end of a hollow membrane fiber which is in fluid contact with said test fluid wherein the other end is connected to the conduit comprising the reagent fluid down flow from said sensor.

17. (Amended) A [sensing arrangement] method according to claim 16 wherein the sweep fluid is selected from the group consisting of water and saline.

18. (Amended) A [sensing arrangement] method according to claim 16 wherein said reagent is mixed with said sweep fluid, thereby causing a measurable optical change.

19. (Amended) A [sensing arrangement] method according to claim 18 wherein said optical property is at least one selected form the group consisting of absorbance, fluorescence, color change, and chemiluminescence.